
A Guide to Validity Testing

MISSOURI DEPARTMENT OF CORRECTIONS

Definitions

Creatinine: a chemical waste molecule that is generated from muscle metabolism that is excreted at a relatively constant rate.

Specific Gravity: a measure of concentration of particles in the urine.

Diluted Specimen: a urine specimen with a creatinine and specific gravity levels significantly lower than a normal human urine. This type of specimen could indicate excessive amounts of fluids were consumed to reduce the drug levels in the urine.

Substituted Specimen: a urine specimen in which the creatinine and specific gravity levels are so diminished that they are not consistent with human urine.

Invalid Specimen: a urine specimen which has a creatinine level is so diminished that it is not consistent with human urine, yet the specific gravity indicates normal level.

Normal Urine Characteristics

Color:	yellow
Clarity:	clear and transparent
Odor:	odorless (freshly voided)
Foaming:	some foaming may exist due to proteins
pH:	4.5 to 8.0
Creatinine:	150 to 180 mg/dL
Specific Gravity:	> 1.0030
Temperature:	90-100°
Normal Human urine production: 1 mL per minute which is equivalent to 60 mL per hour without fluid consumption.	

Questions & Answers

How much water would it take to significantly dilute my urine and for how long?

Studies have shown the immediate consumption of one liter of water can dilute urine 8 fold within 30 minutes and remain dilute for about 2 hours. The immediate consumption of two liters of water can dilute urine 16 fold within 60 minutes and maintain a dilution factor of 10 for the next 2 hours.

If I work outside or perform aerobic exercise, will I have low creatinine readings?

No, exercising and working outside does not cause your urine to become dilute. In fact during the process of sweating, your kidneys filter less water and the creatinine is still excreted at a constant rate.

Does consuming creatine change my creatinine reading?

Creatine is converted to creatinine in the body. There is an equilibrium between these two components. Only about 3% difference in the creatinine level has been identified in creatinine loading studies.

What diseases cause low creatinine readings?

Psychogenic polydipsia
Diabetes insipidus
Nephrogenic diabetes
Latrogenic diabetes
Polyuria (water intoxication)
Heart Disease

Collection Strategies

- No notice.
- Collect in early morning or middle of the night when possible.
- Limit fluid intake.
- Direct observation.
- Forbid handbags, unnecessary outer garments in restroom.
- Require offenders to wash their hands.
- No access to water, soaps, or cleansing agents.
- Use bluing agents, temperature strips, etc. whenever direct observation is not possible.

Common Adulterants Added to Urine

Detergents, Soaps, Sodium Nitrate, Methanol, Salt, Vinegar, Bleach, Ammonia, Lemon, Lime, Drano, Visine
Klear & Whizzies (Potassium/Sodium Nitrates)
Urinaid (gluteraldehyde)
Urine Luck (Pyridinium chlorochromate)
Stealth (Peroxidase/peroxide)
Mary Jane's Superclean 13 (Surfactant)

Validity Testing Criteria

(For Offender Testing)

Dilute: Creatinine < 10 mg/dL and
Specific Gravity < 1.0030.

Substituted: Creatinine < 2 mg/dL and
Specific Gravity \leq 1.0010 or
Specific Gravity \geq 1.0200

Adulterated: pH < 3 or > 10
Nitrites > 500 μ g/mL
Presence of gluteraldehyde, bleach, surfactant, etc.

Endogenous substance greater than normal

*Invalid: Creatinine < 2.0 mg/dL
Specific Gravity > 1.0010
and < 1.0200

*All specimens which have been identified as invalid will be recollected and processed in accordance with Offender Drug Testing Policy, D 5-7.1 Section III G 6.

Violations

A violation report will not be issued within seven days of a prior positive test for the same drug.

Upon receipt of a positive drug test result or a specimen found to be adulterated, diluted or substituted, the offender will (1) receive a conduct violation in accordance with IS19-1.2. Conduct Violation reporting, or (2) receive a Violation Report Notice of Citation in accordance with P3-8, Violation Process.

Probation & Parole violations/Notice of Citation Reports will not recommend revocation based on diluted or invalid results.

Drug Detectability

(Journal of the American Medical Association's Council on Scientific Affairs, 1987)

<u>Substance</u>	<u>Duration</u>
Amphetamine/ Methamphetamine	48 hours
Barbiturates	
Short acting	24 hours
Intermediate acting	48-72 hours
Long acting	7 days or more
Benzodiazepines	3 days (therapeutic dose)
Cocaine Metabolites	2-3 days
Codeine/Morphine	48 hours
Propoxyphene/ Norpropoxyphene	6-48 hours
Cannabinoids (marijuana)	
Single use	3 days
Moderate use	4 days
Heavy use	10 days
Chronic heavy use	21-27 days
Phencyclidine (PCP)	8 days